MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY,
SHAHEED ZULFIQAR ALI BHUTTO CAMPUS, KHAIRPUR MIR'S
Phone No.0243-9280314

No. PD/MUET/KHP/-114
Dated: 10-04-2017

To,

Manager (Reforms)
Sindh Public Procurement Regulatory Authority,
Government of Sindh,
Barrack 8 Secretariat 4A
Court Road, Karachi.

SUBJECT: **PROCURMENT OF EQUIPMENT FOR INSTRUMENTATION & CONTROL LAB OF ELECTRICAL ENGINEERING DEPARTMENT MUET, SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S.**

Reference: **NIT NO: PID (H) 97707 DATED 29-08-2016 SERIAL NO.29804.**

Dear Sir,

Please find enclosed herewith the Letter of Award, BOQ, Contract Agreement; BER and Contract Evaluation Form for hoisting on SPPRA Website as required under Rule No.50 of SPPRA 2010 and amended 2013.

It is pertinent to mention here that the BER along with other required documents have already been sent to SPPRA under Rule 45 of SPPRA Rule 2010 vide this office letter No. PD/MUET/KHP/-36 Dated: 01-02-2017 and the same has been hoisted on SPPRA Website on 08-02-2017. (Copy enclosed).

With Best Regards,

10/4/17

PROJECT DIRECTOR
MUET, SZAB, CAMPUS KHAIRPUR MIR'S

C.C

1. Deputy Director, ICPC MUET, SZAB Campus Khairpur Mir's Letter of Award, BOQ, Contract Agreement and Contract Evaluation Form for uploading on web-site of MUET, SZAB Campus Khairpur Mir's.
2. Secretary to Pro Vice Chancellor, MUET, Shaheed Z.A.B Campus Khairpur Mir's.

No.PD/MUET/KHP/-88
Dated. 20-03-2017

M/s RASTEK Technologies,
Classic Centre, C-15, Block-16, Gulshan-e-Iqbal,
Main University Road,
Karachi-75300, Pakistan
Tel +92 – 21 -111, Fax +92-21-34994678

Subject: **SUPPLY OF LABORATORY EQUIPMENT FOR INSTRUMENTATION & CONTROL LAB OF ELECTRICAL ENGINEERING DEPARTMENT AT MUET, SHAHEED Z.A/ BHUTTO CAMPUS AT KHAIRPUR MIR'S.**

Reference: No. RAL/IND/QR-101058/2016 dated: 17.09.2016

Dear Sir,

Please find enclosed herewith an order form for supply of Lab Equipment for Instrumentation & Control Lab of Electrical Engineering Department, MUET, SZAB Campus Khairpur Mir's, under Category-B of the Conditions of Contract (on C&F basis), as per your tender under reference discussed with your representative during the meeting of Equipment / Furniture / Any other material Selection & Tender Scrutiny Committee held on 16.12.2016 and subsequently approved by Approving and Contract Award Committee in its meeting held on 23.12.2016 for an amount of **USD 65,789.00.**

You are requested to supply the Equipment latest by **30-06-2017** as per tender document / details given in **Clause-8** of the **Order Form** and the agreement arrived in the above said meetings.

You are further requested to attend the office of the undersigned to sign the agreement duly adhesive stamped of **0.35% of the total value of contract**, furnish the revised Proforma invoice in accordance with the schedule of particular of stores and performance bond 10% of the Value Work Order for the period as stated under Clause-23 of the Conditions of Contract within 7 days after receipt of this supply order.

Yours faithfully,

20/3/17
(Engr. Sajjad Hussain Memon)
Project Director

Copy f.w.cs. for information to:-

1. The Director Finance, MUET, Jamshoro.
2. The Director (W&SP), MUET, Jamshoro.
3. The Chairman, Electrical Engineering Department, MUET, SZAB Campus Khairpur Mir's.
4. The Secretary to Vice Chancellor, MUET, Jamshoro.
5. The Secretary to Pro-Vice Chancellor MUET, SZAB Campus Khairpur Mir's

Received 20/3/17

20/3/2017

20/3/17
(Engr. Sajjad Hussain Memon)
Project Director

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S.

ORDER FORM

Project Directorate,
Mehran University of Engineering and Technology, Shaheed Z.A. Bhutto Campus at Khairpur Mir's.

1. Contract No. & Date:		No. PD/MUET/KHP/ -88 Dated. 20-03-2017
2. Name & Address of the Contractor.	:	**M/s RASTEK Technologies,** Classic Centre, C-15, Block-16, Gulshan-e-Iqbal, Main University Road, Karachi-75300, Pakistan Tel +92 – 21 -111, Fax +92-21-34994678
3. Contractor's Tender No. & Date	:	No. RAL/IND/QR-101058/2016 dated: 17.09.2016
4. Head to which the cost is debitable	:	**Essential Needs for Strengthening and Development of Mehran University of Engineering & Technology, Shaheed Z.A Bhutto Campus Khairpur Mir's.**
5. Conditions of the Contract	:	As contained in the tender documents and as modified to incorporate the agreements arrived at in the meetings of Equipment / Furniture / Any other Material Selection & Tender Scrutiny Committee held on 16.12.2016 in the office of Pro-Vice Chancellor, MUET, SZAB Campus Khairpur Mir's and subsequently approved by approving and contract award committee in it's meeting held on 23.12.2016 in the committee room of Vice Chancellor Secretariat at MUET, Jamshoro.
6. Particulars Governing the Suppliers (Stores). (a) Specifications	:	As per details given in Clause No.4 of "Information to Tenderers" and as per Clause-8, "Particulars of Stores" of this "Order Form".
(b) Manufacturer's &/or Supplier's Name & Address	:	**M/s INFOTECH USA, Inc. 21 Meyer Avenue, Valley Stream , NY 11580 (USA)** Tel: 516-825-3351 Fax 516-568-0566
(c) Country of Origin	:	**USA**
7. Last date of Shipment/ Delivery	:	**30-06-2017**
8. Particulars of Stores	:	Attached

Cont'd...

8 - PARTICULAR STORES

S. No.	Item as per Tender	Item Code	Description of Store	Specifications of Stores with Catalogue No.	Unit	Qty	Currency	Price per Unit	Total C&F Price for the item under Category-B
1	2	3	4	5	6	7	8	9	10
I.	**Instrumentation & Control Lab**								
1	Ball & Beam Control System. The control system must consist of a base module ideally suited to introduce basic control concepts and theories relevant to real world applications of servomotors, from cruise control in automobiles to high-precision robotics manipulators used in industry. In addition to teaching control concepts, the control unit should be flexible enough to be used for research in various areas, including nonlinear control, optimal control, time delay, and dynamic inversion. The Base Unit must be a geared servo-mechanism system equipped with an optical encoder and a potentiometer to measure the output shaft position, and a tachometer to measure the speed of the motor. The base unit must be flexible enough to add additional modules to perform experiments to demonstrate real-world control challenges such as aircraft roll control ,guidance of sea vessels, aircraft and submarines or in satellite navigation. Students must be able to: • design a proportional-velocity compensator to control the servo load shaft • design a cascade control to stabilize the Ball & Beam control system.	EL/ICL-T2-01	Ball & Beam Control System	As per Column 4	each	1	$	USD 20,909.00	USD 20,909.00

S. No.	Item as per Tender	Item Code	Description of Store	Specifications of Stores with Catalogue No.	Unit	Qty	Currency	Price per Unit	Total C&F ... for the item under Category-B
	• design a PID-based controller that maintains the direction of the gyroscope module • implement the controllers and evaluate the performance of the system • The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View. Technical Specifications: Base dimensions not more than <=600mm x 300mm (L x W) Beam length not more than<= 500mm Ball mass not more than<=100g Ball and Beam module mass not more than<=700g Total Assemblymass not more than<=3000g Ball position sensor measurement range =±5 V Motor Nominal Voltage =12V Motor Armature Inertia >1.4 x 10-6 kg.m2 Flywheel Radius >=50mm Flywheel Inertia about Spin Axis>=1kgm2 Motor Maximum Speed 6000 R.P.M Tachometer Measurement Range ±5 V Tachometer Sensitivity >0.001V Encoder Resolution>=4096 Gear Ratio70								
2	Two Level Tank control System. The system should be able to convey the control concepts and theories related to fluid dynamics, pressure and time delays, encountered in real world industrial applications. The item must provide learning regarding: • Designing of the transfer function based mathematical model of the coupled tank system using basic techniques of the control engineering. • linearize the obtained non-linear equation of motion about the quiescent point of operation	EL/ICL-T2-02	Two Level Tank Control System.	As per Column 4	each	1	$	USD 11,850.00	USD 11,850.00

S. No.	Item as per Tender	Item Code	Description of Store	Specifications of Stores with Catalogue No.	Unit	Qty	Currency	Price per Unit	Total C&F Price for the item under Category-B
	• Controller designing using PID and other techniques like pole placement and LQR in order to meet the required design specifications for various possible configurations of the coupled tank system. • Comparative performance analysis for the system when controlled with different types of controller at different operating configurations. • The system must be flexible enough to implement the advance control techniques for research purpose. • The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View. • Hands on training must be provided for all item on both Mat Lab and Lab View Platforms Technical Specifications: Device mass upto 10 kg Frame dimensions – H × W × L 300 mm × 300 mm × 920 mm Pressure sensor sensitivity 61 mm/V Pressure sensor range 0 to 7 kPa Tank height upto 500 mm								
3	DC Motor Control System. The DC Motor controller System should be a servo system designed to teach and demonstrate the fundamentals of motor servo control in a variety of ways. The system can easily be configured to control motor position and speed. Students must learn how to: • model a DC motor experimentally • design and implement a proportional-integral (PI) controller to control the speed of a motor • design and implement a proportional-derivative (PD) controller to control the position of a motor • design and implement a proportional-integral-derivative (PID) controller for tracking error and disturbance rejection. • The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View.	**EL/ICL-T2-03**	DC Motor Control System	As per Column 4	each	**2**	$	USD 6,550.00	USD 13,100.00

S. No.	Item as per Tender	Item Code	Description of Store	Specifications of Stores with Catalogue No.	Unit	Qty	Currency	Price per Unit	Total C&F Price for the item under Category-B
	• Hands on training must be provided for all item on both Mat Lab and Lab View Platforms Technical Specification: Motor nominal input voltage upto 24.0 V Motor nominal speed around 3000 RPM Motor torque constant 0.042 Nm/A Encoder line count 512 lines/rev Encoder line count in quadrature 2048 lines/rev Encoder resolution (in quadrature) 0.2 deg/count Amplifier type PWM Amplifier output voltage ± 24 V								
4	Heating, Ventilation & Air Conditioning System. The Heating, Ventilation and Air Conditioning (HVAC) must be suitable to teach and demonstrate the fundamentals of climate control. The system could easily be configured to control the temperature in a chamber using a variety of control methods. Students must learn how to: • model a system • design and implement a relay feedback controller to control the temperature in the chamber • design and implement a proportional-integral (PI) controller to control the temperature in the chamber. • The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View. • Hands on training must be provided for all item on both Mat Lab and Lab View Platforms Technical Specifications: Heating element maximum power output upto 20 W Amplifier type PWM Amplifier output voltage ± 24 V with 100 % duty cycle Fan rated voltage 5 V Multi speed fan running around 3x3000 rpm	EL/ICL-T2-04	Heating, Ventilation & Air Conditioning System.	As per Column 4	each	2	$	USD 2,775.00	USD 5,550.00

S. No.	Item as per Tender	Item Code	Description of Store	Specifications of Stores with Catalogue No.	Unit	Qty	Currency	Price per Unit	Total C&F Price for the item under Category-B
5	Basic Rotory Pendulum Control System. This basic Rotary Pendulum system must be suited to teach and demonstrate the fundamentals of inverted pendulum balance and control. The system could easily be configured to teach hybrid swing-up and LQR control fundamentals. Students must learn how to: • model a pendulum • design and implement a state-feedback controller to balance the pendulum in the upright position • design and implement a controller to swing up the pendulum • The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View. • Hands on training must be provided for all item on both Mat Lab and Lab View Platforms Technical Specifications: Rotary pendulum link mass upto 25 g Rotary pendulum link length 130 mm	EL/ICL-T2-05	Basic Rotory Pendulum Control System.	As per Column 4	each	2	$	USD 3,595.00	USD 7,190.00
6	Vertical Take-off and Landing (VTOL) system The Vertical Take-off and Landing (VTOL) system must be suited to teach and demonstrate the fundamentals of flight dynamics and vertical take-off and landing flight control. The system could easily be configured to control the flight of the trainer using a variety of control methods. Students learn how to: • model a system • design and implement a proportional-integral (PI) controller to control current • find the system resistance based on measurements • design and implement a proportional-integral-derivative (PID) controller to control current • The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View.	EL/ICL-T2-06	Vertical Take-off and landing (VTOL) System	As per Column 4	each	2	$	USD 3,595.00	USD 7,190.00
							TOTAL C&F VALUE		USD 65,789.00

9.	Final place of Delivery	:	Mehran University of Engineering and Technology, Shaheed Z.A. Bhutto Campus at Khairpur Mir's.
10.	Dispatch Instructions (a) Consignee for Dispatch	:	The Project Director, MUET, Shaheed Z.A. Bhutto Campus at Khairpur Mir's.
	b) Dates of Shipment &	:	The Contractor must intimate in writing to the Project Director MUET, SZAB Campus Khairpur Mir's, Sindh, Pakistan the date of shipment of the Stores soon after the shipment & approximate date of arrival of the ship at Karachi port. This information must reach the Project Director at least 8 days before arrival of the ship. In case of failure to supply this information in time, the demurrage and other charges will be on contractors account.
	(c) Part shipment	:	Not allowed
	(d) Transshipment	:	Allowed
	(e) Ship	:	Pakistan Flag ship should be used as far as possible for shipment of the Stores; if no such ship is available such other ships may be used consistent within implementation of the Project with economy and efficiency.
	(f) Shipment	:	The Stores must be shipped under desk
11.	Packing & Marking. (a) Packing	:	The Packing of the equipment shall be usual Export packing to ensure safe journey by sea, rail and road of the goods to destination.
	(b) Marking	:	Each packing shall be clearly & legibly marked in English with the following.
	(i) Port of Designation	:	Karachi
	(ii) Name of the Ship.	:	**By Air**
	(iii) Name & Address of the Consignee	:	Project Director, MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's,
	(iv) Name & Address of Contractor.	:	**M/s RASTEK Technologies,** Classic Centre, C-15, Block-16, Gulshan-e-Iqbal, Main University Road, Karachi-75300, Pakistan Tel +92 – 21 -111, Fax +92-21-34994678
	(v) Contract No. & Date	:	No. Nil

Cont'd...

(vi) Case Number :

(vii) Gross Weight & Dimensions : Dimensions (Length, breadth & height)

(viii) Marking Label : Mehran University of Engineering & Technology, Jamshoro, 4"x_6" green rectangle.

MUET SZAB

If the contractor fails to comply with above instructions, he shall be held responsible for any loss or demurrage etc. Occurring due to wrong/nil/insufficient marking of package etc.

12. Inspection:

(i) Inspection authorities and place for pre shipment inspection. : As required by Insurance Co. if any.

(ii) Inspection authorities for final inspection at MUET, SZAB Campus Khairpur Mir's. : Representative of
(a) MUET, SZAB Campus at Khairpur Mir's.
(b) Insurance Company &
(c) Contractor.

(iii) Mode of Inspection.
(a)Pre shipment : The authorities for pre shipment inspection as mentioned at (i) above shall carry out inspection and issue inspection certificate.

(b) Referrol to the Project Director: However, in case of rejection of the Stores by the inspection authorities, the manufacturers/ Contractor will refer the cases to the Project Director MUET, SZAB Campus Khairpur Mir's, for final decision settlement/ replacement etc.

(c) Final Inspection : The final inspection of the Stores will be done jointly by the authorities mentioned at (ii) above.

(iv) Shipment without pre shipment Inspection.

(a) No Stores shall be shipped without pre shipment inspection by the pre-shipment inspection authorities mentioned at 12(i) above. The Contractor shall offer for pre-shipment inspection Stores fabricated by the manufacturers bearing their indelible and unbreakable seals and a certificate that each identifiable unit of Stores has passed adequate tests conforming to the requirements of the specifications. The manufacturer's certificate duly conformed as correct by the certificate of the inspection authorities mentioned in 12(iii) (a) above shall be annexed to the shipping documents and form part of the documents.

The Contractor will also produce evidence that he has already given a performance bond to the extent of 10% of the price of the Stores. These documents are to be produced before a letter of credit can be drawn upon.

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(b) Before the shipment commences, the Contractor will give under registered cover a notice of 21 days to the inspection authorities to carry out such pre-shipment inspection informing them of the date and address of the premises of the manufacturer where the Stores will be available for information.

(c) In special cases, the MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's, may at the request of the Contractor, or if pre-shipment inspection is not required by the Insurance Company, waive the pre shipment inspection. In such cases, the Project Director, MUET, SZAB Campus Khairpur Mir's, shall issue the waiver in writing and, then the Stores can be shipped under manufacturer's test certificate. This waiver shall be deemed as authorization to ship the Stores for the purposes of negotiating the letter of Credit.

(d) The pre-shipment inspection and/or the waiver thereof shall in no way absolve the Contractor of any of his /her obligations under this Contract.

(v) **Inspection of Arrival at Port**: If it is found necessary to arrange inspection of the Stores on arrival at Karachi port for the purpose of customs clearance, or for any other purpose, it shall be done in the presence of the representatives of the MUET, SZAB Campus Khairpur Mir's, nominated by the Project Director and those of the Contractor and the Insurance Company. The report of inspection which, inter alia, should indicate the condition in which each unit of each package has been received will be signed by the above representatives. This inspection will be arranged by the Project Director, MUET, SZAB Campus Khairpur Mir's, with information to the Contractor and the Insurance Company.

(vi) **Final Inspection and Taking over:**

(a) Upon receipt of the Stores in the labs of MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's, and after final inspection of the Stores by the inspection authorities mentioned at 12(ii) above and as stated in Clause-9 of the Conditions of Contract, a taking over certificate will be issued by the person nominated by MUET SZAB Campus as stated in Clause-10 of the Conditions of Contract. The taking over of the damages item of Stores shall be withheld until it has been completely repaired, replaced, re-inspected and found in acceptable conditions.

(b) Wherever necessary, installation and demonstration of the Stores shall be arranged as stated in Clause-11 of the Conditions of Contract. After taking over, a completion certificate will be issued to the contractor as stated in Clause-12 of the Conditions of Contract.

13. **Insurance:**

(a) An open cover note for the total cost of the Stores to be imported will be issued by **M/s EFU General Insurance Ltd,** Al-Fallah Chamber Tilak Incline, Hyderabad, , from Contractor's ware house to ultimate consignee, to remain valid for 16 weeks after clearance and dispatch of the Stores, by the Project Director clearing agent Specific comprehensive insurance policy will be issued by the above mentioned Insurance Company on receipt of the express Facsimile (Fax) advice of shipment of Stores which the Contractor shall send to the Project Director as well as to **M/s EFU General Insurance Ltd,** Al-Fallah Chamber Tilak Incline, Hyderabad, atleast 10 days prior to each shipment followed by confirmation copy by registered post. Payment of insurance charges will be made by the Contractor to **M/s EFU General Insurance Ltd,** Al-Fallah Chamber Tilak Incline, Hyderabad, at actual less Government discount, if any in non-convertible Pak currency against the bill duly supported by cover note, policy etc. as an extra item. Insurance should cover all risks,

Cont'd...

except war risk, and should cover the C&F value of the Contract price. The Contractor shall be required to furnish details of consignments and other particulars necessary to enable the Insurance Company to ensure the consignment. If the contractor policy, and if any loss occurs to the consignee in the absence of Insurance of the consignment, it shall be the Contractor's responsibility to make good the loss so occurred to the Mehran University SZAB Campus.

(b) Simultaneous to the Fax advice, and in addition to that, the Contractor shall furnish a declaration of shipment containing full particulars of each consignment including number of packages, name of vessel, sailing date, port of shipment, C&F cost mentioning the number of contract to **M/s EFU General Insurance Ltd,** Al-Fallah Chamber Tilak Incline, Hyderabad, under intimation to the Project Director, MUET, SZAB Campus Khairpur Mir's.

14. **Special Instruction:**

The Contractor shall send by air mail 06 (six) sets of non-negotiable shipping documents direct to the MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's, so as to reach him 08 (eight) days before the arrival of the ship at Karachi port.

15. **Terms of Payment**:

A sum of **USD 65,789.00** will be paid to **M/s INFOTECH USA, Inc. 21 Meyer Avenue, USA,** Principal of **M/s RASTEK Technologies, Karachi,** through irrecoverable and confirmed Letter of Credit to be opened by the MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's, Sindh, Pakistan on receipt of the following documents by the Project Director, MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's.

(i) The inspection certificates issued by the pre-shipment inspection authorities or their nominees or authorization to ship the Stores. Project Director MUET, SZAB Campus Khairpur Mir's, as per Clause 12(iv) (c) above.

(ii) On board ocean Bill of Lading showing freight pre-paid.

(iii) Beneficiaries-signed invoice and packing list in quadruplicate. Invoice should include the amount of sea freight pre-paid.

(iv) A certificate from beneficiaries that the Stores dispatched conform to the description/ specifications of the contract in all respects. It is also to be certified that the packing of the cases is in accordance with clause N 0.11 above and that the Stores supplied by them are brand new and absolutely free from all defects in materials, quality and workmanship.

For inland expenses as stated at S.No.9 of (b) & (c) Part-2 (i, ii, iii, iv & v) Instructions to Tenderers which includes agent's/supplier commission, insurance charges, installation, commissioning and demonstration, all charges pertaining to clearance of the Stores except Custom, Excise duty and the Transportation charges from- the Port to the laboratories of the University, the contractor will be paid.

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16. **Extension in L.C:** In case the contractor fails to deliver the consignment within the stipulated delivery period the extension in the delivery period will be granted at the discretion of the University, consequently Bank's commission and other charges arising from the extension in the L.C will be borne by the Contractor.

A/C 25/2/12
(Engr. Sajjad Hussain Memon)
Project Director

Copy f.w.cs.for information, record and necessary action/implementation and where applicable to:-

1. **M/s INFOTECH USA, Inc. 21 Meyer Avenue, Valley Stream USA.**
2. The Chairman, Electrical Engineering Department, MUET, SZAB Campus Khairpur Mir's.
3. The Secretary to Pro-Vice Chancellor MUET, SZAB Campus Khairpur Mir's

A/C 25/2/12
(Engr. Sajjad Hussain Memon)
Project Director

/QR-101058/16

oject Director
Z.A BHUTTO CAMPUS
RPUR MIR'S

ANNEXURE-C1

Quotation For Instrumentation & Control lab of Electrical Engineering Department

P-1

S:no	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Qty Of Stores	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
1	EL/ICL-T2-01 Ball & Beam Control System	Ball & Beam Control System	**Ball & Beam Control System** **M/S NI USA** The Ball and Beam module is ideal to introduce various control concepts related to unstable closed loop systems. Students can use it to demonstrate real-world control challenges such as aircraft roii control Using this experiment, students learn to: □Design a proportional-velocity compensator to control the servo load shaft □Design a cascade control to stabilize the ball □Implement the controllers and evaluate the Features : □High quality aluminum chassis with precision-crafted parts □Robust machined aluminum casing with stainless steel rod □Ball and Beam module easily attaches to Rotary Servo Base Unit □Optional Master/Slave configuration with additional Ball and Beam module Easy-connect cables and connectors □Fully compatible with MATLAB®/Simulink®andLabVIEW™Fully documented system models & parameters provided for MATLAB®, Simulink®, LabVIEW™andMaple™□Open architecture design, allowing users to design their own controller Readymade Experiment Topics: Modeling Topics □First-principles derivation □Transfer function representation □Linearization □Model validation Control Topics	2	Sets	$ 20,909.00	US$	$ 41,818.00	USA/ CANADA

S:no	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Qty Of Stores	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
			□Multiple loops □PID Fully functional system consisting of Plant, Controller Amplifier and Software Technical Support and Hands on Training by OEM Also contains Rotational Dynamics/Gyro Stabilization Plant to demonstrate real-world control challenges such as those encountered in control and guidance of sea vessels, aircraft and submarines or in satellite navigation.The Gyro/Stable Platform module attaches to the Rotary Servo Base Unit (SRV02). Using this experiment, students learn how to: □ model the system from first principles.						
2	EL/ICL-T2-02 Two Level Tank Control System (qty 2)	Two Level Tank Control System	**Two Level Tank Control System M/s: NI USA** a bench-scale model of two tanks with a pump, ideally suited to introduce control concepts and theories related to fluid dynamics, pressure and time delays, encountered in real world industrial applications, such as petro-chemical, paper making and water treatment plants. Students learn how to: Mathematically model the Coupled Tanks plant from first principles in order to obtain the two open-loop transfer functions characterizing the system, in the Laplace domain □linearize the obtained non-linear equation of motion about the quiescent point of operation □design, through pole placement, a Proportional-plus-Integral-plus-Feedforward-based controller for the Coupled Tanks system in order for it to meet the required design specifications for various possible configurations □implement controllers and evaluate their	2	Sets	$ 11,850.00	US $	$ 23,700.00	USA /CANADA

S:no	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Qty Of Stores	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
			Features: Overall frame constructed from solid plexiglas □Two tanks and single pump design □Pressure / level sensors on each tank □Re-configurable water flow from pump and tanks □Drain tap allows water from top tank to pour directly into basin □Three sizes for outflow orifices supplied (small, medium, and large) □Pressure sensors can be calibrated (using gain and offset knobs) Readymade Curriculum Topics Derivation of dynamic model from first-principles Transfer function representation Linearization evel control PID Feed-forwar Control parameter tuning Fully functional system consisting of Plant, Controller, Amplifier and Software Technical Support and Hands on Training by OEM						
3	EL/ICL-T2-03 DC Motor Control System	DC Motor Control System	**DC Motor Control System for NI ELVIS II** **Requires NI ELVIS II base platform (included in price)** **M/s\NI USA** It is a versatile servo system designed to teach and demonstrate the fundamentals of motor servo control in a variety of ways. Developed exclusively for NI ELVIS II. The system can easily be configured to control motor position and speed. Students learn how to:	2	2 Sets	$ 6,550.00	US$	$ 13,100.00	USA /CANADA

S:no	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Qty Of Stores	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
			-model a DC motor experimentally design and implement a proportional-integral (PI) controller to control the speed of a motor -design and implement a proportional-derivative (PD) controller to control the position of a motor - design and implement a proportional-integral-derivative (PID) controller for tracking error and disturbance rejection Features : Plug-and-play design for quick and easy lab system Removable inertia disk - Durable DC servo motor with no cogging - Built-in PWM amplifier with linear response -High resolution optical encoder to sense position -Hardware velocity measurement -D51 Comprehensive digital resources and ABET-aligned courseware included Fully compatible with LabVIEW™ Fully documented system models and parameters provided for LabVIEW™ Readymade curriculum topics 1.System modeling and model validation 2.Speed and position control 3.System simulation 4.PID control 5.Error tracking 6.Disturbance rejection Technical Support and Hands on Training by OEM						

S:no	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Qty Of Stores	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
4	EL/ICL-T2-04 Heating, Ventilation & Air Conditioning System	Heating, Ventilation & Air	**Heating, Ventilation & Air Conditioning System for NI ELVIS II Requires NI ELVIS II base platform (not included in price) M/s: NI USA** The Heating, Ventilation and Air Conditioning (HVAC) Board is ideally suited to teach and demonstrate the fundamentals of climate control. Developed exclusively for NI ELVIS II. The system can easily be configured to control the temperature in a chamber using a variety of control methods. Students learn how to: -model a system -design and implement a relay feedback controller to control the temperature in the chamber. -design and implement a proportional-integral (PI) controller to control the temperature in the chamber. Features: Plug-and-play design for quick and easy lab setup - Variable control of the heater -Fixed speed fan -Direct heater temperature sensor -High accuracy temperature sensors -Comprehensive digital resources andABET-aligned courseware included -Fully compatible with LabVIEW -Fully documented system models and parameters provided for LabVIEW™ Readymade curriculum topics 1.Temperature control 2.Relay / on-off control design 3.System modeling 4.Parameter identification 5.Model validation 6.PI control design 7.Saturation and integrator windup 8.Feedback control set-point weighingTechnical Support and Hands on Training by OEM	2	SETS	$ 2,775.00	USD	$ 5,550.00	USA /CANADA

S:no	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Qty Of Stores	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
5	EL/ICL-T2-05 Basic Rotary Pendulum Control System	Basic Rotary Pendulum Control	**Basic Rotary Pendulum Control System for NI ELVIS II** **M/s: NI USA** **Requires NI ELVIS II base platform (not included in price)** It is a versatile unit ideally suited to teach and demonstrate the fundamentals of inverted pendulum balance and control. Developed exclusively for NI ELVIS II.The system can easily be configured to teach hybrid swing-up and LQR control fundamentals model a pendulum -design and implement a state-feedback controller to balance the pendulum in the upright position -design and implement a controller to swing up the pendulum Features : -Plug-and-play design for quick and easy lab setup -Durable DC servo motor -Built-in PWM amplifier with linear response -High resolution optical encoder -Protective cover to shield the circuitry -comprehensive digital resources and ABET-aligned courseware included -Fully compatible with LabVIEW™ -Fully documented system models and parameters provided for LabVIEW™ **Readymade curriculum Topics** System modeling -Parameter estimation -Balance control -Linear-Quadratic Regulator design -Non-minimum phase -Friction compensation -Non-linear swing up control -Energy-based control -Hybrid control Technical Support and Hands on Training by OEM	2	SETS	$ 3,595.00	USD	$ 7,190.00	USA /CANADA

S:no	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Qty Of Stores	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
6	EL/ICL-T2-06	Vertical Take -off and Landing (VTOL) system	**Vertical Take-off and Landing (VTOL) system for NI ELVIS II** **M/s: NI USA** **Requires NI ELVIS II (not included in price)** Requires NI ELVIS II (not included in price) It is ideally suited to teach and demonstrate the fundamentals of flight dynamics and vertical take-off and landing flight control. The system can easily be configured to control the flight of the trainer using a variety of control methods. Students learn how to: • model a system • design and implement a proportional-integral (PI) controller to control current • find the system resistance based on measurements • design and implement a proportional-integral-derivative (PID) controller to control current Aerospace devices are typically more difficult to model, Features : Compact rotary servo system -Plug-and-play design for quick and easy lab setup -High quality rugged propeller assembly -High air flow fan with safety guard -High resolution encoder -Built-in amplifier -Protective cover to shield the circuitry -Comprehensive digital resources and ABET-2 2,910.00 5,820.00 aligned courseware included □Fully compatible with LabVIEW™ □Fully documented system models and parameters provided for LabVIEW™ therefore software system identification tools are used to determine parameters or actual dynamics. Also, due to their inherent complexity, flight systems are usually broken down into different subsystems to make it more manageable.	2	SETS	$ 3,595.00	USD	$ 7,190.00	USA /CANADA

S:no	Code/ Item No.	Description Of Stores	Detailed Specifications Of Stores with Model No.	Qty Of Stores	Unit	Rate Per Unit	Currency	Total C&F Price	Country of Origin
			Topics covered in the readymade courseware: 1.Experimental modeling 2.Identifying parameters experimentally 3.Model validation 4.PID control 5.Current control 6.Pitch control 7.Cascade control 8.Actuator dynamics Technical Support and Hands on Training by OEM						

TOTAL OFFR.
US$ 98,54

NOTE : INSTALLATION/TRANNING BY NI ENGINEER

RAL/IND/QR 101053/16

Date: 16,september,2016

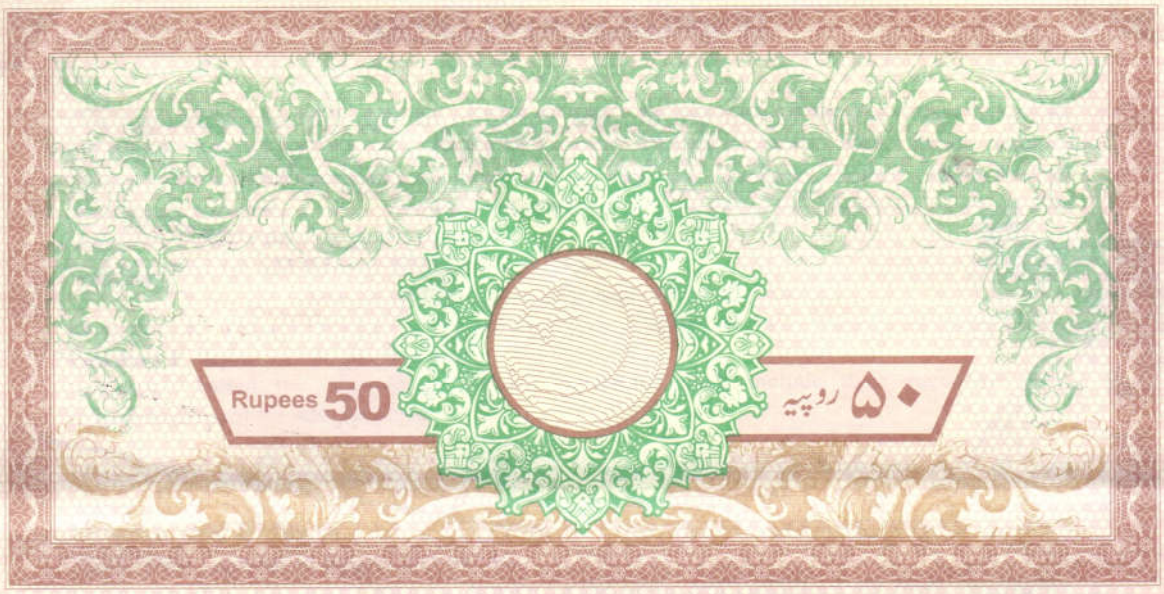
ATT: Project Director
MUET SHAHEED Z.A BHUTTO CAMPUS
KHAIRPUR MIR'S

SUB: Quotation For Instrumentation & Control lab of Electrical Engineering Department

ANNEXURE "C2"

S:no	Item Code	Description of store	Total C&F Price for Part 1	Currency	Exchange Rate	Total Price for Part I (Rs)	Total Price for Part II (Rs)	Total Cost (Rs)
1	EL/ICL-T2-01	Ball & Beam Control System	$ 41,818.00	USD				
2	EL/ICL-T2-02	Two Level Tank Control System	$ 23,700.00	USD				
3	EL/ICL-T2-03	DC Motor Control System	$ 13,100.00	USD				
4	EL/ICL-T2-04	Heating, Ventilation & Air Conditioning System	$ 5,550.00	USD				
5	EL/ICL-T2-05	Basic Rotary Pendulum Control	$ 7,190.00	USD				
6	EL/ICL-T2-06	Vertical Take -off and Landing (VTOL) system	$ 7,190.00	USD				

J058266



RUPEES FIFTY ONLY

MUHAMMAD FAISAL KHAN STAMP VENDOR
Licence No. 124, Shop No. S-7, Maymar Tower
Gulshan-e-Maymar Karachi

S. NO. 121031
DATE 11 JAN 2017
ISSUED TO WITH ADDRESS
THROUGH WITH ADDRESS Muhammad Yaqoob
Advocate
PURPOSE
NOT FOR USED BANK GUARANTY/WILL/DIVORCE
VENDOR NOT RESPONSIBLE ANY FAKE DOCUMENTATION

PD/MUET/KHP-88.

22/3/2017 157

24,150

ARTICLES OF AGREEMENT

This Agreement made this 20th day of **March 2017**, by and between the Pro Vice Chancellor, MEHRAN UNIVERSITY ENGINEERING AND TECHNOLOGY, SZA Bhutto campus Khairpur Mir's, Sindh including his successors in office and Assignees/ Agents, acting through the Project Director, [illegible] ,Mehran university of Engineering and Technology , hereinafter called the "**University**", of the one part,

And **Mr. RAFIQ AHMED LAKHANI (C.E.O)**

(name and designation of the authorized person)

of RASTEK TECHNOLOGIES located at **C-15, Classic Centre Main University Road Gulshan-E -Iqbal Block-16 Karachi**.

hereinafter called the "Contractor" which expression shall include their successor, lega representatives of the second part.

Whereas the University requires Laboratory equipment at Khairpur Mir's whereas the Contractor has agreed to supply, install, put into operation and demonstrate the working of the said store valued at **US$ 65,789.00** (US $ SIXTY FIVE THOUSAND SEVEN HUNDRED EIGHTY NINE Only (amount in figures and words)

in the period of 120 days / months, subject to the terms and conditions set forth, hereinafter, which have been accepted by the Contractor.

Now this Agreement witnessed as follows:

1. In this agreement works and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents which, for the purpose of identification, have been signe by **Mr. RAFIQ AHMED LAKHANI (C.E.O)**

(name and designation of the authorized person)

on behalf of the **Contractor,** and by

(name and designation of the authorized person)

on behalf of the University, all of which shall be deemed form and be read and construed as a part of this **Agreement** viz:

a) Articles of Agreement;
b) Instructions to Tenders;
c) Condition of Contract;
d) Contract's offer including the relevant correspondences prior to signing of th Agreement with all Annexure duly filled in:
e) The specifications of the stores; and
f) Bill of quantity with prices.

PAKISTAN SPECIAL ADHESIVE 22 MAR 2017

22-3-17.

3. In consideration of the payment to be made to the contractor, the **Contractor** hereby **covenants** with the University to supply, deliver, install, put into operation and demonstrate the working of the stores in conformity in all respects of the Contract & the order form No# PD/MUET/KHP-88

4. The **University** hereby **covenants** to pay the contractor in consideration of the supply, delivery, installation, putting into operation and demonstration of the working of the equipment the contact price in the manner prescribed by the contract and approved by the University.

In witness Thereof the parties have hereunto set their respective hands and seals, the day month and year above written.

Project Director

PROJECT DIRECTOR
MUET, Shaheed Z.A. Bhutto Campus
Khairpur Mir's

WITNESSES:

University Witness No. 1: Signature _____

Name: Sajdar Ali

Designation: Superintendent

University witness No. 2: Signature: _____

Name: Nisar Ahmed

Designation: CCPO

CONTRACTOR

Contractor's Witness No. 1: Signature: _____

Name: FEROZ

Designation: Support Engineer

Contractor's Witness No. 2: Signature: _____

Name: Engr. Amir Raza

Designation: Application Engineer

SINDH PUBLIC PROCUREMENT REGULATORY AUTHORITY

CONTRACT EVALUATION FORM

TO BE FILLED IN BY ALL PROCURING AGENCIES FOR PUBLIC CONTRACTS OF WORKS, SERVICES & GOODS

1) NAME OF THE ORGANIZATION / DEPTT. MUET, Shaheed Z.A Bhutto Campus Khairpur Mir's
2) PROVINCIAL / LOCAL GOVT./ OTHER Federal Government
3) TITLE OF CONTRACT Procmnt: Equipt: Instrumentation & Control Lab of Elect: Deptt:
4) TENDER NUMBER NIT NO: PD/MUET/KHP/387 DATED: 23-08-2016
5) BRIEF DESCRIPTION OF CONTRACT Procmnt: Equipt: Instrumentation & Control Lab of Elect: Deptt:
6) FORUM THAT APPROVED THE SCHEME Higher Education Commission, Islamabad
7) TENDER ESTIMATED VALUE 6.907 (M)
8) ENGINEER'S ESTIMATE (For civil works only) N.A.
9) ESTIMATED COMPLETION PERIOD (AS PER CONTRACT) 06 Months
10) TENDER OPENED ON (DATE & TIME) 20-09-2016 @ 12.30pm
11) NUMBER OF TENDER DOCUMENTS SOLD (Attach list of buyers) Three (03) Nos
12) NUMBER OF BIDS RECEIVED Two (02) Nos
13) NUMBER OF BIDDERS PRESENT AT THE TIME OF OPENING OF BIDS 02 Nos
14) BID EVALUATION REPORT (Enclose a copy) Enclosed
15) NAME AND ADDRESS OF THE SUCCESSFUL BIDDER M/s Rastek Technologies, Karachi
16) CONTRACT AWARD PRICE 6.907 (M)
17) RANKING OF SUCCESSFUL BIDDER IN EVALUATION REPORT (i.e. 1st, 2nd, 3rd EVALUATION BID). 1st Lowest

18) METHOD OF PROCUREMENT USED : - (Tick one)

a) SINGLE STAGE – ONE ENVELOPE PROCEDURE _____ Domestic/ Local

b) SINGLE STAGE – TWO ENVELOPE PROCEDURE Yes _____

c) TWO STAGE BIDDING PROCEDURE _____

d) TWO STAGE – TWO ENVELOPE BIDDING PROCEDURE _____

PLEASE SPECIFY IF ANY OTHER METHOD OF PROCUREMENT WAS ADOPTED i.e. EMERGENCY, DIRECT CONTRACTING ETC. WITH BRIEF REASONS:

Vice Chancellor

19) APPROVING AUTHORITY FOR AWARD OF CONTRACT _____

20) WHETHER THE PROCUREMENT WAS INCLUDED IN ANNUAL PROCUREMENT PLAN?

Yes	✔	No	

21) ADVERTISEMENT :

i) SPPRA Website
(If yes, give date and SPPRA Identification No.)

Yes	SPPRA Web SERIAL NO. # 29804
No	

ii) News Papers
(If yes, give names of newspapers and dates)

Yes	Daily Jang (Urdu) Dt: 27-08-2016, Daily Sind Express (Sindhi) Dt: 27-08-2016 & Daily Dawn (English) Dt: 29-08-2016
No	

22) NATURE OF CONTRACT

Domestic/ Local	✔	Int.	

23) WHETHER QUALIFICATION CRITERIA WAS INCLUDED IN BIDDING / TENDER DOCUMENTS?
(If yes, enclose a copy)

Yes	✔	No	

24) WHETHER BID EVALUATION CRITERIA WAS INCLUDED IN BIDDING / TENDER DOCUMENTS?
(If yes, enclose a copy)

Yes	✔	No	

25) WHETHER APPROVAL OF COMPETENT AUTHORITY WAS OBTAINED FOR USING A METHOD OTHER THAN OPEN COMPETITIVE BIDDING?

Yes		No	✔

26) WAS BID SECURITY OBTAINED FROM ALL THE BIDDERS?

Yes	✔	No	

27) WHETHER THE SUCCESSFUL BID WAS LOWEST EVALUATED BID / BEST EVALUATED BID (in case of Consultancies)

Yes	✔	No	

28) WHETHER THE SUCCESSFUL BIDDER WAS TECHNICALLY COMPLIANT?

Yes	✔	No	

29) WHETHER NAMES OF THE BIDDERS AND THEIR QUOTED PRICES WERE READ OUT AT THE TIME OF OPENING OF BIDS?

Yes	✔	No	

30) WHETHER EVALUATION REPORT GIVEN TO BIDDERS BEFORE THE AWARD OF CONTRACT?
(Attach copy of the bid evaluation report)

Yes	✔	No	

31) ANY COMPLAINTS RECEIVED
(If yes, result thereof)

Yes	
No	No.

32) ANY DEVIATION FROM SPECIFICATIONS GIVEN IN THE TENDER NOTICE / DOCUMENTS
(If yes, give details)

Yes	
No	No

33) WAS THE EXTENSION MADE IN RESPONSE TIME?
(If yes, give reasons)

Yes	Yes copy attached
No	

34) DEVIATION FROM QUALIFICATION CRITERIA
(If yes, give detailed reasons.)

Yes	
No	No

35) WAS IT ASSURED BY THE PROCURING AGENCY THAT THE SELECTED FIRM IS NOT BLACK LISTED?

Yes	✔	No	

36) WAS A VISIT MADE BY ANY OFFICER/OFFICIAL OF THE PROCURING AGENCY TO THE SUPPLIER'S PREMISES IN CONNECTION WITH THE PROCUREMENT? IF SO, DETAILS TO BE ASCERTAINED REGARDING FINANCING OF VISIT, IF ABROAD:
(If yes, enclose a copy)

Yes		No	✔

37) WERE PROPER SAFEGUARDS PROVIDED ON MOBILIZATION ADVANCE PAYMENT IN THE CONTRACT (BANK GUARANTEE ETC.)?

Yes	✔	No	

38) SPECIAL CONDITIONS, IF ANY
(If yes, give Brief Description)

Yes	
No	No

Signature & Official Stamp of
Authorized Officer Sajjad Hussain Memon (Project Director) 10/12/12

PROJECT DIRECTOR
MUET, Shaheed Z.A. Bhutto Campus
Khairpur Mir's

FOR OFFICE USE ONLY

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY,
SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S
Phone No.0243-9280314

No. PD/MUET/KHP/- 512
Dated: 19-12-2016

To,

Manager (Reforms)
Sindh Public Procurement Regulatory Authority,
Government of Sindh,
Barrack 8 Secretariat 4A
Court Road, Karachi.

SUBJECT: EXTENSION OF BID VALIDITY. SPPRA SR. NO.29804.

Reference to the NIT No.PD/MUET/KHP/-387 Dated:23-08-2016 hoisted on SPPRA website under Serial No. 29804 for Procurement of Equipment for remaining Laboratories of Mechanical Engineering Department and Instrumentation & Control Lab of Electrical Engineering Department at MUET, Shaheed Z.A Bhutto Campus Khairpur Mir's.

As per original schedule the bid validity will expire on 20.12.2016, however the permission of extension of bid validity was obtained from the competent authority (copy attached). Such matter of extension was also communicated to the bidding firms who had participated in the tendering process. The bidding firms have also willingly extended validity of their offers (copies attached herewith).

It is therefore requested to kindly extend the bid validity at your end and oblige.

With Best Regards,

19/12/16
PROJECT DIRECTOR

C.C to:

1. The Secretary to Pro-Vice Chancellor, MUET, Shaheed Z.A.B Campus Khairpur Mir's.

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY,
SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S
Phone No.0243-9280314

No. PD/MUET/KHP/- 36
Dated:01-02-2017

To,

Manager (Reforms)
Sindh Public Procurement Regularity Authority
Barrack-8 Secretariat 4-A
Court Road
Karachi.

SUBJECT: **BID EVALUATION REPORT FOR THE PROCUREMENT OF EQUIPMENT REMAINING LABORATORIES OF MECHANICAL ENGINEERING DEPARTMENT AND INSTRUMENTATION OF CONTROL LAB OF ELECTRICAL ENGINEERING DEPARTMENT AT MUET, SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S.**

Reference: **NIT NO: PID (H) 97707 DATED:29-08-2016 SERIAL No. 29804.**

Dear Sir,

We are enclosing here hard and soft copies on CD of Bid Evaluation Report of Part-II (signed by the Procurement Committee) of the subject NIT for hoisting / publication on the SPPRA website in compliance of Rule No. 45.

The Part-I of the subjected procurement is dropped due to un-availability of funds.

It is further requested that the Bid Evaluation Report of Part-II subjected NIT may kindly be hoisted at SPPRA website on the Evaluation Reports webpage, at earliest so that the post tender codal formalities could be completed.

Your earliest response will highly be appreciated please.

1/2/17
(PROJECT DIRECTOR)

C.C to:
1. Deputy Director, ICPC, MUET, Shaheed Z.A Bhutto Campus Khairpur Mir's Bid Evaluation Report for uploading on Web-Site of MUET, Shaheed Z.A Bhutto Campus Khairpur Mir's.
2. The Secretary to Pro-Vice Chancellor, MUET, Shaheed Z.A Bhutto Campus, Khairpur Mir's.

02/02/17

Received 2-docs
01/2/17